Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

1. (currently amended) A method to conduct an experiment, comprising steps of:

selecting factors for the experiment;

estimating interactions among levels of the factors

assigning a probability value of positive ~~interactions~~ interaction for each of the estimated interactions;

defining a first experimental space by structuring levels according to a Latin Square strategy

effecting a combinatorial high throughput screening (CHTS) method on ~~an~~ the experimental space representing the levels ~~, wherein the CHTS method comprises defining a first experimental space by structuring the levels according to a Latin Square strategy~~; ~~and~~

adjusting the probabilities for each interaction according to results of the CHTS method; and

conducting another CHTS method on an experimental spce representing the adjusted probability interactions until a best set of factor levels selected.

2. (previously presented) The method of claim 1, wherein an investigator or a client who benefits from results assigns a high probability value, medium probability value or low probability value of each positive interaction.

3. (previously presented) The method of claim 1, wherein a high probability value, medium probability value or low probability value of each positive interaction is assigned for each of the estimated interactions.

4. (original) The method of claim 1, wherein an investigator and a client who benefits from results from the CHTS experiment in concert determine a probability value to be assigned.

5. (original) The method of claim 1, comprising assigning values to represent a high probability value, medium probability value and low probability value of each positive interaction for each of the estimated interactions.

6. (previously presented) The method of claim 1, comprising assigning a 0.6 to about 0.99 value as a high probability value, about 0.2 to about 0.59 value as a medium probability value and about 0.01 to about 0.19 value as a low probability value.

7. (previously presented) The method of claim 1, comprising assigning a 0.7 to about 0.9 value as a high probability value, about 0.2 to about 0.5 value as a medium probability value and about .05 to about 0.15 value as a low probability value.

8. (original) The method of claim 1, further comprising repeating a CHTS method step and an adjusting probabilities step until a best set of levels is selected.

9. (original) The method of claim 1, comprising constructing an adjustable definitional model to represent the estimated interactions and assigned probabilities.

10. (canceled)

11. (canceled)

12. (canceled)

13. (canceled)

14. (original) The method of claim 1, wherein conducting the CHTS experiment comprises providing a reactor plate comprising a substrate with an array of reaction cells

containing at least one reactant according to an input factor level and reacting the reactant in parallel with other reactants

15. (original) The method of claim 1, wherein the CHTS comprises effecting parallel chemical reactions of an array of reactants defined as the experimental space.

16. (original) The method of claim 1, wherein the CHTS comprises effecting parallel chemical reactions on a micro scale on reactants defined as the experimental space.

17. (original) The method of claim 1, wherein the CHTS comprises an iteration of steps of simultaneously reacting a multiplicity of tagged reactants and identifying a multiplicity of tagged products of the reaction and evaluating the identified products after completion of a single or repeated iteration.

18. (original) The method of claim 1, wherein the experimental space factors comprise reactants, catalysts and conditions and the CHTS comprises

(A) (a) reacting a reactant selected from the experimental space under a selected set of catalysts or reaction conditions; and (b) evaluating a set of results of the reacting step; and

(B) reiterating step (A) wherein a selected experimental space selected for a step (a) is chosen as a result of an evaluating step (b) of a preceding iteration of step (A).

19. (original) The method of claim 16, wherein the evaluating step (b) comprises identifying relationships between factor levels of the candidate chemical reaction space; and determining the chemical experimental space according to a full factorial design for the next iteration.

20. (cancelled)

21. (canceled)

22. (canceled)

23. (canceled)

24. (canceled)

25. (canceled)

26. (original) The method of claim 1, wherein the factors comprise a reactant or catalyst at least partially embodied in a liquid and effecting the CHTS method comprises contacting the reactant or catalyst with an additional reactant at least partially embodied in a gas, wherein the liquid forms a film having a thickness sufficient to allow a reaction rate that is essentially independent of a mass transfer rate of additional reactant into the liquid to synthesize products that comprise the results.

27. (canceled)

28. (canceled)

29. (canceled)

30. (canceled)

31. (canceled)

32. (canceled)

33. (canceled)

34. (canceled)

35. (currently amended) A method to conduct an experiment, comprising steps of:

selecting factors for the experiment;

estimating interactions among levels of the factors;

assigning a probability value of positive interactions for each of the estimated interactions;

effecting a combinatorial high throughput screening (CHTS) method on an experimental space representing the levels, wherein the CHTS method comprises

(a) defining a first experimental space by structuring the levels according to a Latin Square strategy;

(b) formulating a combinatorial library of catalyst compositions according to the defined first experimental space; and

(c) effecting parallel reaction of the library to produce products; and

adjusting the probabilities for each interaction according to results of the CHTS method; until a catalyst composition lead is selected from the library of catalyst compositions.

36. (previously presented) The method of claim 35, wherein the catalyst compositions include a catalyst system comprising palladium.

37. (previously presented) The method of claim 35, wherein the catalyst compositions include a catalyst system comprising a halide composition.

38. (previously presented) The method of claim 35, wherein the catalyst compositions include a catalyst system comprising an inorganic co-catalyst.

39. (previously presented) The method of claim 35, wherein the catalyst compositions include a catalyst system that includes a combination of inorganic co-catalysts.

40. (canceled)